AN ASSESSMENT OF POTENTIAL WORLD HERRITAGE SITES IN THE PACIFIC REGION

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Background

The Pacific region has considerable conservation needs, but lacks the large animal species and the ancient monuments, which captures public imagination and funding support. The Pacific however is blessed with a great diversity of people, languages and cultures that have lasted many years.

Settled initially some 20,000 years ago, most of the habitable islands of the Pacific were occupied variously by Melanesian, Micronesian and Polynesian people. Their island homes were diverse; from low coral islands or atolls lifted from the ocean floor to islands of volcanic origin and continental islands. Isolated islands saw the evolution of unique fauna and flora with many endemic species (Lucas, 1991).

It is believed that the Pacific islands region has more rare, endangered and threatened species per capita than anywhere else on earth. Its marine environment comprises an enormous and largely unexplored resource, including the most extensive and diverse reefs in the world, the largest tuna fishery, the deepest oceanic trenches and the healthiest remaining populations of many globally threatened species including whales, sea turtles and salt water crocodiles. Its high islands support large blocks of intact rainforests, including many unique species and communities of plants and animals found nowhere else in the world. For some islands, more than 80% of the species are endemic, unfortunately, about 50% of these species are reported to be at risk (SPREP 1999).

Knowledge of resource management specific to small tropical islands like in the Pacific is weak. Traditional resource management systems may no longer be able to cope with the fast-changing societies that wish to live beyond the “subsistence lifestyle” of the old days. Nor would they be appropriate in densely populated areas that once had only a few permanent residents. Still, there are important lessons to be learned from traditional systems, which would no doubt benefit modern management systems.

Management approaches in the Pacific today are rediscovering the futility of failing to involve local communities in decision-making whether for conservation, or other forms of development. Local communities are vital to the success of any natural resource-based project in the Pacific. They must not only support such projects, but also have ownership of, and commitment to them.

The Convention for the Protection of the World's Cultural and Natural Heritage and the Pacific.

The World Heritage Convention (WHC) entered into force in December 1975, three years after its adoption in Paris in November 1992. Despite its being one of the most universal international legal instruments in the field of natural and cultural heritage conservation, only three Pacific island countries (the Solomon Islands, Fiji and Papua New Guinea) have become Parties to the Convention to date.

It is not easy to pinpoint the exact reasons behind the indifferent support by Pacific island countries' towards the WHC. The following are believed to be some of the main contributing factors:

· Lack of general awareness and understanding about the WHC;

· The perception that the Convention was narrowly focused on historical monuments and spectacular natural landscapes;

· Countries are already contributing to a multitude of international conventions that provide little or no benefits for the cash-strapped island countries of the Pacific;

· The absence of an agent to promote Pacific island participation in the convention; and

· The process for listing sites under the convention was too complicated that other international instruments were preferred instead.

Although there is a current lack of progress by Pacific island countries acceding to the convention, the situation could well change as more information becomes available to assist them assess the real value of the convention to their respective countries. The "Findings and Recommendations" of a Global Strategy Meeting for the Pacific Region held in Fiji in July 1997 suggested that:

1. The Pacific contains a series of spectacular and highly powerful spiritually valued natural features and cultural places; and

2. The Pacific island nations are particularly attracted to the possibilities of using the World Heritage cultural landscape category and the serial transborder / transnational sites delineation mode. These preferences reflect desire to employ the history of voyaging, land and sea travel routes, trade, and the first landings, settlements, and agriculture in the Pacific, as mechanisms for heritage conservation in the region.

Following the 1997 meeting, SPREP and the UNESCO Office Apia agreed to join forces to explore funding opportunities to help promote the WHC within countries of the Pacific. These efforts resulted in two significant developments:

a) The adoption of the WHC as one of the tools / themes for the Sixth Conference on Nature Conservation in the Pacific Islands Region (Pohnpei, 1997); and

b) A funding proposal to the government of New Zealand for the establishment of a staff position within UNESCO Apia to specifically deal with the promotion of the convention in the Pacific islands region.

Funding for the staff position was approved in 1998 and the post was subsequently filled in 1999. An important responsibility for this post was the identification of potential areas for World Heritage inscription and raising governments' awareness about the role and importance of the convention.

Critical Management Issues Affecting World Heritage Sites

There is only one World Heritage Site in the Pacific – the Rennel Islands in the Solomon Islands. Our knowledge of the issues affecting the management of WH sites in this region is therefore limited to that specific site. However, it is believed that for the Pacific island countries, the issues affecting the management of WH sites are the same as those affecting other forms of protected areas. They include:

1. Lack of capacity at community level – Since land and natural resources are predominantly communally-owned, WH sites are expected to be owned and managed by local communities whose participation and support are critical to the success of such projects. Unfortunately, these communities often lack the knowledge, skills and resources to manage these areas sustainably. These problems could be addressed through capacity building programmes aimed at improving the skills of local communities, or by creating effective partnerships between communities and relevant government agencies and NGOs to share the pool of expertise available through the partnership.

2. Inflexibility in project design – The WH inscription process is exhaustive, requiring a very detailed project document produced in accordance with very technical and scientific criteria. This often places these documents beyond the capacity of local communities. The end result is a document prepared by a consultant to meet the needs of the WHC but fails to take into account the real needs of local communities. The WH should move away from rigid project frameworks, and more towards process approaches, which are flexible, iterative and responsive to long term perspectives and uncertainties. The WH should let go the control of project design processes, to assure locally driven processes based on principles of community ownership, partnership, dialogue and mutual accountability.

3. Lack of Government Support – As WH sites are likely to be community-owned and controlled, there is a possibility that governments would consider these areas as outside the scope of government-funded programmes for nature conservation. Making governments commit financially to the management of the WH sites should be confirmed as much as possible, during the design phase of projects. It is not enough for governments simply to endorse and submit proposals for WH listing without investing resources in their sustainable management.

4. Community conflicts – WH sites are likely to be large areas involving more than one local community hence, it is realistic to expect a series of conflicts arising between them. The more common of these would include:

· Land boundary disputes;

· Communities not wanting to work together but to “do their own thing”;

· Disagreements about how responsibilities and benefits should be shared equally between the different communities; and

· Difficulty reaching consensus in decision-making.

Potential WH Sites in the Pacific Region

The areas described below are believed to have potential as World Heritage sites.

1. **The Arnavon Islands, Solomon Islands**

Geographical location

The Arnavon Islands lie in the Manning Straits, about 25km equidistant between northern Santa Isabel and southeast Choisel in the Solomon Islands.

Conservation value

The Arnavon Islands support a great deal of marine resources, including key species of commercial and subsistence value for local communities, and contain significant areas of unspoiled reef. The Arnavon Islands are also the most important rookery in the western Pacific for the endangered Hawksbill turtle (***Eretmochelys imbricata)*** and home to one of the world’s largest nesting population of the species. The islands also support a high diversity of terrestrial fauna for a small group of islands, with 41 species of birds, six species of bat, and at least seven species of reptiles. Eight species of birds are endemic to the area. The Arnavons are also an important nesting ground for the rare Sanford’s Sea Eagle, Brahmany Kites, ospreys, megapodes, two species of pigeon, and many sea bird species. The island group was also an important stopover for headhunting operations, when canoes were en route between the western Solomons and Ysabel.

Many migratory seabirds use the islands and tidal flats as feeding and nesting areas during November to January, for example whimbrel (***Numenius phaeopus),*** long-billed curlew (***N. americanus)*** and common sandpiper ***(Actitis hypoleucos).*** Estuarine crocodiles (***Crocodylus porosus)*** no longer inhabit the islands, due to intensive hunting for skins in the 1960s and early 1970s (Vaughan, 1981).

A Rapid Ecological Assessment (REA) carried out of the islands and surrounding environments in 1993 by The Nature Conservancy (TNC) and the Ministry of Forest, Environment and Conservation (MFEC) concluded that:

· The coral reef systems of the Arnavon Islands was in excellent condition with an impressive diversity of corals, fish, and marine invertebrates;

· Populations of important commercial macro-invertebrates (e.g. trochus, beche-de-mer, giant clams, and black and gold lip pearl oysters) were detected; and

· The islands were an important habitat for an impressive variety of terrestrial fauna.

Cultural heritage

Although the islands are uninhabited and are officially owned by the government of the Solomon Islands, there are a number of communities from Isabel and Choisel provinces who claim traditional ownership to the islands, and are users of the resources for both subsistence and commercial purposes. Traditionally, the Sinagi and Volaikana tribes, located in the villages of Kia (northern Isabel) and Posarae (southern Choisel) have ownership rights to the islands. But while these tribes have traditional ownership rights, the Gilbertese people of Waghena, one-and-a-half hours by canoe to the north of the Arnavon Islands, are the main users of the marine resources. The Gilbertese were relocated from Kiribati to Waghena by the British in the early 1960's. As non-Solomon Islanders, they have rights only to limited land area on Waghena island and have no traditional marine tenure.

Because they are, culturally speaking, "people from the sea", the Gilbertese are much more reliant on the marine resources of the area than the traditional owners who have access to large land areas for subsistence cultivation. The traditional landowners however, resent the fact that the Gilbertese have been largely responsible for the decline of the marine resources of their islands. Efforts to increase the awareness of the Gilbertese about the depleted state of the marine resources are currently underway.

Conservation Management

In response to growing concerns that hawksbill populations were declining, the islands were declared by the Ministry of Natural Resources in 1975 as "off-limits" under a trespass law. The islands were included within a provincial Protected Lands By-law during May 1979 and in April 17, 1980, the islands were established as a wildlife sanctuary under the Local Government Ordinance, the Santa Ysabel Province (Wildlife Sanctuary) by-law, 1980.

In 1995, the government of the Solomon Islands, after consultation with the communities of Kia, Waghena and Posarae proposed for SPREP funding the establishment of a Marine Conservation Area in the Arnavon Islands. The Arnavon Marine Conservation Area (AMCA) was subsequently approved for funding under the South Pacific Biodiversity Conservation Programme (SPBCP) of SPREP the same year.

The overall aim of the AMCA is ***to establish community-managed Marine Conservation Area to protect and sustainably manage marine and terrestrial ecosystems in and around the Arnavon Islands, for the primary benefit of the local communities of Kia, Waghena and Posarae and for the wider benefit of the Pacific region*** (SPBCP, 1995).

The AMCA has a total area of 8,270 hectares with a core area of about 3,100 ha. The land area (size

of Arnavon islands) is about 500 ha.

Management activities carried out by the AMCA include community law enforcement to curb poaching of turtle and megapode eggs, illegal fishing and catching of turtles in the conservation area, turtle tagging, beach monitoring, and training of local rangers.

Management constraints

Although the islands have been returned to customary jurisdiction, there remains some dispute as to which group has jurisdiction over which island(s). The establishment of the AMCA has helped the communities put this matter aside but to work together to protect the islands as one group of islands regardless of ownership. While this approach appear to be working for the time being at least, there is a risk of the dispute surfacing once again at some time in future.

The isolation of the Arnavons from the main center of commerce in Honiara and other sub-centers in the Solomon Islands makes this area extremely difficult and costly to manage. Patrolling the area for poachers and illegal fishing is an expensive but necessary exercise. As fuel costs continue to increase, the cost of monitoring the AMCA may eventually become too high for the project to afford.

Lack of communication is a constraint associated with the isolation of the AMCA. With no power or telephone on the islands, contact with the rest of the country is extremely difficult. Supplies have to be purchased and stored for weeks if not months to avoid long waiting periods until the next supply arrives on island.

2. The Haapai Islands, Kingdom of Tonga

Geographic location

The Haapai Group of islands lie in the center of the Kingdom of Tonga, between 19’ 35” and 20’ 30” s. latitude and 174’ 15” and 175’ 6” w. longitude. Haapai extends 150 kilometers from Hunga Haapai and Hunga Tonga in the southwest to Ofolanga and Ha’ano in the north and northeast, and covers an area of approximately 10,000 square kilometers.

Conservation value

The islands of Haapai range in size from less than 1 ha to 46 km2. Most of the islands are quite small, with only four islands having areas over 10 km2.

The eastern islands of Haapai are situated on the Tongan ridge, which is separated from the western volcanic islands by the Tofua Trough, which is about 1800 meters deep. The Tongan Trench, one of the deepest in the South Pacific, is located about 130 km to the east of the Group. About 10% of the estimated 100 seamounts found in Tonga’s EEZ are found in the Haapai Group. These are very important ecosystems for certain types of fishing (e.g. deepwater snapper).

The extensive reef systems of Haapai, which include the entire spectrum of reef development, are of particular importance in terms of biodiversity conservation. These include a 130 km barrier reef along the eastern edge of the Group complete with uplifted and submerged sections, as well as numerous fringing reefs, newly established coral colonies on recently formed islands, and the absence of reefs on active volcanic structures, such as Fonua Fo'ou. The absence of significant fresh water and siltation in Haapai, together with extensive areas of shallow water may be factors contributing to the proliferation of coral reefs in the area.
In terms of overall flora of Haapai, preliminary analyses of available sources indicate that the terrestrial vascular flora is composed of somewhere around 500 species, of which at least 12% are only found on Haapai on the high volcanic islands of Tofua and Kao. At least two species are endemic.

Excluding sea birds and migratory species, 26 bird species have been reported to be resident in Tonga. Of these, about 20 are probably still present in Haapai. There are about 23 sea birds or migratory birds. Of these, 11 are probably resident, 4 are migratory species that are found during part of the year in Haapai, 7 are vagrants that are seen only occasionally, and one is a migratory breeder.

Apart from the estimated 750 finfish species found in the diverse marine ecosystems of Haapai, the marine fauna of the islands also include sperm whales, humpback whales, a number of dolphin species, marine reptiles including four species of turtles.

Cultural heritage

Tongan culture is fascinating and complex. It lies at the heart of Tongan life but is not immediately obvious to foreigners, and requires skilled interpretation by locals to "bring it alive". The Royal family which rules Tonga can be traced back over one thousand years and is associated with many stories and legends. A number of historical and archaeological sites associated with the Royal family are in Haapai. They add to the impressive number of historical places found in the Group. They include:

- Sia heu lupe (pigeon snaring mound) near the top end of the island of Foa;
- Velata fortress (circular fortification) at Velata, Lifuka;
- Olovehi and Huluipaongo tombs (chiefly burial places);
- 'Ahau (chiefly bathing well)
- European cemetery (burial place of missionaries and traders from 19th and early 20th centuries);
- Burial place of murdered sailors of ***Port-au-Prince;***
- Mahina Fekite – site of murder of great chief Tupouniua, now buried in 'Uiha;
- Nuanga, site of old quarry on Liku coast, also reputed to be burial place for the first Mata'uvave (15th century). This title is said to have been held by someone acting as 'governor' in Haapai representing the Tui Tonga.

Combined with its diverse ecosystems and species, the islands of Haapai are an important priority for conservation.

Conservation management

The entire islands of the Haapai Group, Kingdom of Tonga was recommended by government as a Marine Conservation Area under the SPBCP in 1995. It is managed by a Conservation Area Coordinating Committee (CACC) made up of most government agencies with presence on Haapai. The CACC is supported by a Conservation Area Support Officer (CASO) whose salary is paid by the SPBCP. He is directly responsible to the Environment Unit of government, which is the lead agency for the project.

The CACC is chaired by the governor of Haapai. It is responsible for decision making but is dependent on the lead agency and the CASO for implementing its decisions. In 2000, the CACC membership was reduced from 16 to 8 individuals, to make it more effective and manageable.

Management constraints

With 64 islands spread over more than 10,000 km2 of ocean, managing the Haapai islands is a daunting task, especially when there is only a small number of trained personnel to rely on. The Environment Unit, the lead agency for the conservation area has no permanent presence on Haapai. It is therefore not in a good position to provide regular monitoring of the activities of the project.

Associated with the large area covered by the project is the difficulty relating to transport and communication with the lead agency in Tongatapu. Monitoring of what is happening in the outer islands of the Group is problematic without the necessary means of transportation e.g., motor boats.

3. Kosrae Island, Federated States of Micronesia

Geographic location

Kosrae, the second largest island in the Federated States of Micronesia (FSM) is located 5 degrees north, and 163 degrees east, and has a landmass of 42.3 sq. miles. Kosrae consists of a main volcanic island and also the much smaller volcanic island of Lelu. In geological terms, Kosrae is quite young, having formed some 1-2 million years ago over a hot spot trace in the earth's crust.

Conservation value

Kosrae's forests, reefs and lagoons are rich in biodiversity. Its mangrove forests have some unique characteristics, including the fact that it exists behind sand and coral rubble barrier islands – a geomorphic feature considered to be different from most other mangrove forests of the Pacific region (Merlin et al 1993). Some mangrove trees are well over 200 years old, with trunks averaging 30cm in diameter and heights in excess of 40 meters.

An outstanding example of a freshwater swamp forest is also found on the island. The ka tree (***Terminalia carolinensis)*** dominates the freshwater swamp forests. It occurs in association with nunu (***Horsefieldia nunu)*** which like ka, is endemic in Kosrae and traditionally is its most important timber tree. The swamp forest of Kosrae are considered to be "the most scientifically acclaimed in all

Micronesia (ibid.).

Recent marine surveys note that coral reefs around the islands are “healthy and flourishing” (Wilson and Hamilton (eds.), 1992). The age range of corals, including examples of older colonies, is indicative of a long period without severe storm and wave activity, which is uncommon in Micronesian reefs and lagoons, and is rare throughout the Pacific.

Other unique features, such as marine lakes with depths up to 60 feet are present, as so are large areas of undisturbed mangrove forests.

Cultural heritage

Not much is known about the cultural heritage of Kosrae. A 1874 typhoon resulted in the sinking of the schooner Leonora, which is rated the third most famous ship to have sailed the Pacific after the Bounty and the Endeavor (Mitchener and Day, 1957). The wreck of the Leonora rests in 30 feet of water at the Utwa harbour. Kosrae is also believed to have other historical shipwrecks from the whaling era.

Kosrae island has a stone city (Lelu) built of basalt boulders, columnar basalt crystal logs and coral rubble in-fill on the intertidal flat. Construction of the city is believed to have commenced 1,500 years ago and it was still occupied in the 1820s. Although this stone city now lie in ruins, efforts are underway to restore it for the benefit of the island’s younger generations.

Conservation management

The Utwa-walung mangrove forest of Kosrae has been established as a Conservation Area under the SPBCP by SPREP and is the only part of Kosrae under protection. This area is managed by the Development Review Commission (DRC), which has the legal mandate for resource management in Kosrae.

The Utwa-walung enjoys strong support from the governor of the State of Kosrae. This support is likely to be extended to the rest of Kosrae should the conservation initiative be expanded to include the rest of the island.

With the support of the DRC and an SPBCP-funded Conservation Area Officer, a Coordinating Committee has been set up to have primary responsibility for managing the conservation area. Other donors outside SPREP have also contributed to the project, which is an excellent indication of the capacity of the project to attract additional resources.

Management constraints

The main constraints relate to the capacity of the communities to manage the project. At present, only one officer is responsible for its daily activities. This will need to increase if the whole of Kosrae is to become a protected area.

The Utwa-walung currently enjoys the support of the State government, but it is uncertain how long this support will last. Extending the area to cover the rest of the island would inevitably increase management and other costs. Such an increase may be beyond the capacity of the government to absorb.

4. The Kiritimati Atolls, Republic of Kiribati

Geographical location

Kiritimati Atoll is part of the northern Line Islands of the Republic of Kiribati. The following coordinates approximates its location - 2°00' N and 157°20' W. It is located 3,300 km east of Tarawa, (the center of government of the Kiribati republic), 2,500 km directly south of Honolulu and 2,700 km north of Tahiti. With a total land area of 363.7 km2, it is the largest island of Kiribati, constituting 44% of its total land area, and is considered the largest atoll in the world.

Conservation Value

Kiritimati Atoll's avifauna is of regional and international significance. Surveys carried out by the Smithsonian Institution Pacific Ocean Biological Survey Program in the 1960s and early 1970's (W.B. King, 1967) indicated that the expanse of ocean encompassing the Line and Phoenix Islands form one of the world's largest marine avifauna flyways.

Kiritimati Atoll thus provides nesting, roosting, feeding and migration sites for over 40 bird species, but it is the 18 seabird species and one land bird that breed on the Atoll, and their breeding numbers that are of particular significance.

At peak breeding times, numbers are estimated to be over 6 million birds. This represents, possibly, the highest seabird species diversity and largest bird population for any oceanic island in the world. Nesting areas cover many sites on the main land mass, interconnected land areas between the landlocked hypersaline lakes and inner lagoons, the smaller lagoon islets and the three major islets of the central lagoon and three surrounding islets. (R Thaman, 1998). Recent studies (Watling 1999) estimated that 530,000 pairs of sooty terns successfully bred on Kiritimati Atoll in mid-1999, but this is less than half those reported for 1980, and only 15% of the 1967 total.

Kiritimati Atoll's marine ecosystems includes long stretches of fringing coral reefs, reef flats, lagoons and hundreds of hypersaline ponds formed over years of receding and ebbing tidal action. Within these ecosystems – and not on the land - can be found the greatest diversity of life on Kiritimati Atoll.

The hundreds of hypersaline ponds are an interesting and highly visible ecological feature. They are formed in the reef flats where sand and broken coral are firmly bonded together by calcareous algae. At low tide, the reef flats dry out leaving tidal pools wherever there are depressions. In these pools, gobies, damsel fish, small crabs and snail shelter and wait for the tide to run. It is a highly specialised environment with temperatures on sunny days as high as 43 degrees Celcius.

Common species of note include two giant clam species (***Tridacna maxima and T. squamosa*** and` bonefish ***(Albula glossodonta)*** and milkfish ***(Chanos chanos)*** – the latter two forming the basis for a

vibrant tourist industry of anglers. The various marine ecosystems are significant both ecologically and economically. From a conservation point of view, they play a vital supporting role in sustaining the atoll's large population of resident and migratory seabirds.

Cultural heritage –
Although Kiritimati Atoll was uninhabited when Captain James Cook landed on the island on Christmas Eve 1777, there are stone structures and artefacts on the island from that indicate that it was at least temporarily settled in the past, possibly by Polynesians. A succession of settlers interested in copra plantations followed until early 1900's when continuous settlement started.

More serious effort to populate the Atoll followed the period 1956 – 1962 when Kiritimati Atoll was used as a testing site for US and British nuclear weapons. Kiribati officials and government workers, drawn from other islands of Kiribati, were largely having with limited terms.

This absence of an indigenous population with a history of centuries of occupation means there is little of a cultural heritage to speak of. On the other hand, the relics from the past that suggest temporarily settlement by seafaring Polynesians is important if there is interest in capturing that greatest of Polynesian heritage - i.e. pre-historic oceanic navigation and traditional oceanic navigation by stars.

Conservation Management

A comprehensive management plan for Kiritimati Atoll was drawn up in 1983 (Garnett, 1983), based on detailed studies by R. Perry in 1978-1979. Prior to that, the entire atoll was gazetted as a bird sanctuary under the 1938 Gilbert and Eliice Islands Colony Wild Birds Protection Ordinance. Within the larger sanctuary (which did not have any IUCN Management category) the following areas were declared and managed as closed areas – Cook Is, Motu Tabu, Ngaon te Taake, North-west Point, and Motu Upua. IUCN classified these five areas under Category I (Strict Nature Reserve) (IUCN 1991).

In 1996-97, Kiritimati Atoll was declared a conservation area under the South Pacific Biodiversity Conservation Programme (SPBCP) – a UNDP-GEF project – and have been managed as such. This project revolve around strengthening the Wildlife Management Unit in avifauna management, building public awareness and appreciation of the islands avifauna, setting aside Cook Islet as a national marine park including the surrounding fringing reefs, and the sustainable management and use of natural resources. SPBCP support ceases end of 2001, but a Technical Assistance programme involving an avifauna specialist will continue into 2002 and possibly beyond.

The Ministry of Line and Phoenix is the lead agency. The Wildlife Management Unit handles all avifauna projects and is the major beneficiary of the Technical assistance programme that is currently underway. A Conservation Area Coordinating Committee (CACC) that includes representatives from government, the local communities and churches play an advisory role.

Management Constraints –
1. The Wildlife Conservation Unit that is responsible for managing the closed areas and bird

sanctuaries is severely understaffed and with limited technical expertise in avifauna conservation. Consequently, law enforcement is weak and scientific management is non-existent.

2. The current legislation makes no provision for the protection of habitats although the island particularly requires protection due to its extreme ecological simplicity which confers natural fragility.

3. Kiritimati Atoll population is rapidly increasing, and a major Japanese spacecraft launching project (Hope X) that started in early 2000 is expected to further accelerate population growth and with indirect implications on bird population.

4. Poaching of eggs and hunting of birds have been a continuing problem that is now expected to increase.

5. There is little appreciation and support for avifauna protection or nature conservation generally. Being largely a transient population, locals' have little concerns about the long-term implications of over-harvesting of eggs and birds, and therefore no interest in their sustainability, or preservation for future generations.

6. Recent decisions to proceed with the Hope X project is causing considerable uncertainty as to its implications for avifauna protection. Roosting, nesting and breeding sites will be threatened, possibly converted. The influx of locals connected with the Hope X project will place long term pressures on the atoll's meagre water and marine resources, and birds.

5. Rock Islands, Republic of Palau

Geographical location –
The Rock Islands are located in the southern lagoon of Palau's main archipelago, south of the heavily populated main islands of Koror and north of the moderately populated island of Peleliu.

Conservation value
The Conservation value of the Rock Islands is based on its outstanding aesthetics as well as high species diversity.

The Rock Islands includes 424 limestone islands: 397 steep rock islands and 27 low islands on the barrier reef, all of which are part of a formation of coral reef thrust up above sea level. Two islands are quite large: Ngeruktabel (19km2) and Mercherchar (8.8km2) . These two islands support 16 and 13 lakes respectively. The lakes are connected to the lagoon via fissures and tunnels in the limestone rock, and have tidal regimes of various amplitudes and lags. The open lagoon varies in depth from 10 to 40 meters. The area includes about 150 patch reefs in the lagoon and about 500 patch reefs fringing the barrier reef and about 20 reef holes. A barrier reef encloses the islands to the south, east and west.

Taken together, these islands are commonly referred to as comprising one of the natural wonders of the world, both below and above water.

The barrier and patch reefs support high abundance and diversity of hard and soft corals, other invertebrates and fishes. Hard coral diversity at many sites ranges from 40 to 90 species (SPREP 1997). Abundance ranges from 25-50% cover on the reefs among the Rock Islands to high (up to 60% cover on the barrier reefs and reef passes) (ibid.). A survey of the Ngerukewid Islands (one of the larger islands of the Rock Is group) reported more than 80 species of hard corals, 41 species of benthic algae, 169 species of fish, and 260 species of macro-invertebrates other than corals (Birkeland and Manner, 1989). A 1992 rapid ecological survey of the southern lagoon reported 181 species of hard coral species, 343 species of fish, and 47 species of other macro-invertebrates. (J E Maragos, et al. 1994).

A range of marine ecosystems supporting these species includes extensive sea-grass beds, which provide feeding grounds for the endangered green sea turtle and the dugong, and mangroves which takes up a small area but of significance to many fish species.

Hawksbill sea-turtles are found nowhere else in Micronesia but Palau and the Rock Islands provides Palau's most important nesting sites. Other mammals include estuarine crocodiles which is endangered (Messel and King, 1991), a variety of fruit bats (including one endemic species), the endangered Micronesian megapode, and a number of other endangered bird species.

The islands flora is likewise significant, despite being covered with only a thin layer of soil. Manner and Raulerson (1989) reported 123 species of plants on the Ngerukewid islands, most of them endemic or indigenous.

The marine lakes of the Rock Islands provide habitats and support communities and organisms found nowhere else in the world. Their value as 'natural marine laboratories' for basic ecological research is world-renowned.

Cultural heritage

There are no permanent inhabitants in the Rock Islands, although human use of the resources of the area dates back to pre-historic times. In the absence of adequate information, it is difficult to comment on the area's cultural significance other than that it is likely to be intricately linked to the traditions and the culture of the communities in the main islands of Palau who have been using the resources of the area over the centuries.

Conservation management

Formal conservation management of the Rock Islands dates back to 1956 when a 12 km2 complex of 37 islands was established as the Ngerukewid Islands Wildlife reserve with the purpose of retaining the area in its "present primitive condition where the natural plant and animal life shall be permitted to develop undisturbed" (24 Palau National Code 3001).

Since 1980, the Rock Islands has been the subject of a large number of scientific studies, some focusing on specific species (e.g. dugongs – Brownell et all, 1981; crocodiles – Messel and King,

1991; etc.) others on ecosystems and resources.

In 1992, the national government prepared a national conservation strategy that emphasizes management actions needed for the Rock Islands. In 1996, the National Master Development Plan proposed the establishment of “Rock Islands natural Heritage Area” with the objective to “bring an area of outstanding national and international significance under specific management controls to protect that significance for posterity.”

The Palau Conservation Society was commissioned by the Koror State to assist with the management of the Ngerumekaol Islands and this involvement continues with support from both TNC and SPREP. This is supported by many national and state legislation that prescribe specific conditions for harvesting and use of the resources within the Rock Islands.

Palau is a party to a number of international conventions including the Convention on Biological Diversity (CBD), Framework Convention on Climate Change (FCCC) and Convention for Combatting Desertification.

Management constraints -

1. The rapid increase in economic development in Palau is posing a major threat to its natural resources and natural sites of interest to tourists. In particular the number of tourists visiting natural sites such as the Rock Islands have been exceptionally high. Anecdotal evidence of damages to corals, illegal removal, and littering.

2. Despite warnings of the negative impacts of uncontrolled tourist numbers on ecosystems and habitats, there is little political will to regulate tourist numbers.

3. Like many Pacific Island Countries, limited capacity within the Ministry of Marine Resources is a continuing problem for protecting the Rock Islands. This is compounded by the sheer expanse of the area, which require a bigger and better staffed agency to effectively managed.

4. There is clearly a lack of overall enforcement of environmental protection and conservation laws. There is continuos illegal harvesting, illegal and un-permitted road building and other construction material.

5. The overlapping jurisdictions between the state and the national governments have been a source of contention with conservation management. In the case of the Rock Islands, both Koror State and the national government vie for control of the

6. The large number and diversity of stakeholders with interests in the Rock Islands for tourism development purposes, resource users, traditional landowners, and others is demanding a consultative and transparent process of planning. User-group conflicts and difficulties in agreeing on priority issues and actions to be taken are commonplace.

7. Despite strict legislation against illegal harvesting of many species, this remains a problem.

Conclusion

In the vastness that is the Pacific Oceans, some 14 independent Pacific Island countries and many territories control an area of marine and terrestrial expanse that is rich in species and ecosystems and abundant with marine and terrestrial resources. Many ecosystems including coral reefs, mangrove forests, tropic forests and others are of truly global significance. Likewise, many islands have a high level of species endemism, many often not found anywhere else.

The indigenous communities that are part of these islands and ecosystems have evolved cultures that are intricately connected to these environments, such that their livelihoods are intricately dependent and inseparable from the health of ecosystems and resource systems.

Five areas from these islands are proposed above as potential sites for World Heritage listing. These are the Arnavon Islands, Solomon Islands; Haapai, Tonga; Utwa-Walung, Kosrae State, FSM, Kiritimati Atoll, Republic of Kiribati; and Rock Islands, Palau. All are proposed as potential natural sites, with cultural significance varying and, possibly due to the lack of information, offering less potential.

The paper also provides insights into possible constraints hindering the wider application of the WHC amongst Pacific Island Countries.

References Used:

Birkeland, C. and H. Manner (eds) (1989). Resource Survey of the Ngerukewid Islands Wildlife Preserve, Republic of Palau. South Pacific Regional Environment Programme, Noumea, 193pp.

Maragos, J.E., C. Birkeland, C Cook, K. Des Rochers, R. Di Rosa, T.J. Donaldson, S.H. Geermans, M Guilbeaux, H. Hirsh, L.Honigman, N, Idechong, P.S. Lobel, E.Matthews, K.J.McDermid, K.Z. Meier, R. Myers, D.Otobed, R.H.Richmond, B.Smith, R.Smith, (1994). Marine and Coastal Area Survey of the Main Palau Islands: Part 2 Rapid Ecological Assessment Synthesis report. CORIAL, Honolulu, and The Nature Conservancy, Pacific Region.

Messel, H. and F.W.King (1991). Survey of crocodile populations of the Republic of Palau, Caroline Islands, Pacific Ocean, 8 – 24 June 1991. Report to the Government of the Republic of Palau. 21pp.

IUCN. 1991. IIUCN Directory of Protected Areas in Oceania. Prepared by the World Conservation Monitoring Centre. IUCN, Gland, Switzerland and Cambridge, UK. Xxii+447p.

Cassell, J., H. Adelbai, and D.Otobed. (1992). Comprehensive Conservation Strategy for the Republic of Palau.

Freifeld, H. and D. Otobed. (1997).' A preliminary Wildlife Management Plan for the Republic of Palau. Vertebrates'. Bureau of Natural Resources and Development.. 138pp.

SPREP. 1996. Kiritimati Atoll Conservation Area – Preparatory Project Document. SPREP. 93pp.

Sesega, S. 1998. Kiritimati Atoll Conservation Area Project – Community Consultation Report. Unpublished report. SPREP. 12pp.

Thaman, R.R., Clarke, W.C., Eritaia, B. Tebano,T.and Taniera, T. 1995. North Tarawa Conservation Area Project Preparatory Document. Environment Unit, Mministry of Environment and Social Development, Tarawa. Unpl. Report. 93pp.

Perry, R. and M. Garnett. 1998. The Environment of Christmas Island. BirdLife International. Cambridge UK. 36pp.

Watling. D. 1999. Review of the Status of Avifauna Conservation – Kiritimati Atoll, Kiribati. Unpl. Report. Environmental consultants Fiji. 53pp.